REMARKS

The drawings were objected to under 37 CFR 1.83(a) for the reasons stated by the Examiner. Applicants have enclosed for the Examiner's consideration Replacement Sheets for the drawings that now include a new sheet 4 with a new Figure 7. The figures in original sheets 1-3 of the drawings are unchanged. Also enclosed as an Appendix hereto are Annotated Marked-up Drawings showing in red changes in text as follows: the original notations sheet 1 of 3, sheet 2 of 3, and sheet 3 of 3 have been changed, respectively, to 1/4, 2/4, and 3/4; and the heading information has been changed consistent with the present title, docket number, attorney and telephone number, and to correct a previous error in listing the first named inventor.

Figure 7 includes previously identified reinforcing member 46 as a bundle of individual rods 50 with a solid matrix 52 disposed about individual rods 50. This is consistent with the subject matter of paragraph [0019] and original and previously amended claim 8. Because of the proposed addition of new Figure 7, the specification has been amended under BRIEF DESCRIPTION OF THE DRAWINGS to add a new paragraph [0011.1] after paragraph [0011] briefly describing Figure 7. In addition, paragraph [0019] of the specification has been amended to include reference to and a description of Figure 7. It is respectfully requested that the Examiner approve the replacement drawings with the addition of Figure 7 and withdraw the objection under 37 CFR 1.83(a).

The disclosure of the specification was objected to because of the stated informality relating to the status of the parent application. The sentence added before the first sentence of specification has been replaced with one including appropriate identification of the U. S. Patent issued from the parent application. It is respectfully requested that this objection be withdrawn.

Claims 8-10 were rejected under 35 U.S.C. 112, first paragraph, for the reasons stated by the Examiner. Paragraph [0019] of the specification has been replaced with one

retaining reference to a reinforcing member 46 as a rod, not a fiber or filament, and in a preferred form of a bundle of rods described in more detail in connection with new Figure 7. It is respectfully requested that the Examiner reconsider and withdraw this rejection.

Claims 8-10 were rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,834,832 – Mallinder et al. in view of USPN 4,622,254 – Nishimura et al for the reasons stated by the Examiner.

An important feature of one form of the invention of the rejected claims is the combination that not only is each reinforcing pin a bundle of rods, but also that the reinforcing pins are disposed beside the reinforcing fibers in the stacked layers and that a substantially solid matrix resin is disposed about the reinforcing pins. As recognized by the Examiner, the disclosure of Mallinder does not mention use of a bundle of rods. However, neither does Mallinder mention or recognize the importance that reinforcing stitches or pins be disposed beside the reinforcing fibers in the layers of the structure with a matrix resin about the reinforcing stitches or pins. As discussed by applicants in their specification, for example paragraphs [0004], [0013], [0016], [0019], and elsewhere, known methods for introducing a generally transverse reinforcement, including stitches or pins, into a fiber reinforced member with at least a partially cured matrix can and has been observed to result in an article including reinforcing fibers damaged by such transverse reinforcement. Statistically, introduction of a plurality of such pins or stitches must damage at least some of the fibers and, therefore cannot be "beside" the reinforcing fibers as presently claimed and as that term is used herein. Based on the present specification, the term "beside" has been used to mean not interfering with or damaging fibers reinforcing the stacked layers. To emphasize another form of the present invention, as discussed in the specification, applicants have added new claim 12 reciting such an article in which the reinforcing pins are beside the reinforcing fibers in the stack of layers and that a substantially solid matrix is disposed about the reinforcing pins.

The Examiner has combined Nishimura with Mallinder for the purpose of suggesting that use of yarn teaches or makes obvious use of a rod. However, the well known definition of yarn is a continuous, loosely flexible fiber of indefinite length used for knitting, stitching or weaving. It is completely different and the antithesis of a rod generally defined as a stick, wand, staff, etc. of finite length. Accordingly, use of a continuous yarn comprising a plurality of fibers for providing an article with a series of interconnected, looped stitches cannot suggest to one of ordinary skill in the art the use of an individual, discrete pin comprising a bundle of rods. For all of the above reasons, it is believed that the claims presently included in this application are patentable over the combination of Mallinder and Nishimura. It is respectfully requested that the Examiner reconsider and withdraw this rejection under 35 U.S.C. 103(a).

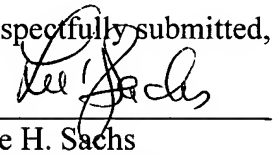
Claims 8-10 were rejected under 35 U.S.C. 103(a) as being unpatentable over USPN – Freitas et al. in view of USPN 4,622,254 – Nishimura et al. for the reasons stated by the Examiner.

Freitas discloses a means for delivering at an acute angle a plurality of unconnected spaced apart reinforcement elements 16, which appear to be pins, into an at least partially cured fiber reinforced composite structure or prepreg. Therefore, notwithstanding the means for pin delivery, as it relates to the present invention the teaching of Freitas is the same as Mallinder et al. in the use of metal pins. The resulting article in either case includes pins introduced into an at least partially cured matrix and resultant potential damage to fibers in the fiber reinforced article. It should be noted that, in column 2, lines 4-21, Freitas recognized the damage to article structural reinforcing fibers resulting from ordinary stitching, stapling and needling, as disclosed in Mallinder. Accordingly, to reduce such damage, Freitas proposed introducing pins into the prepreg at an acute angle. That method may reduce such damage to structural reinforcing fibers. However it cannot eliminate damage to provide an article with the pins disposed "beside" the structural fibers with a substantially solid matrix disposed about the fibers and reinforcing pins, as presently claimed.

As observed by the Examiner, similar to Mallinder, Freitas does not mention the use of a bundle of rods for angular reinforcement. Accordingly, the Examiner has combined Feitas with the above-discussed Nishamura reference that teaches use of yarn for stitching. The combination proposes equating yarn with a bundle of rods. The distinction between yarn and rods has been discussed above and is repeated here in connection with this rejection. As stated above, use of continuous yarn comprising a plurality of fibers for providing an article with a series of interconnected, looped stitches cannot suggest to one of ordinary skill in the art the use of an individual, discrete pin comprising a bundle of rods. In connection with the Examiner's discussion of claims 9 and 10, such claims are forms of the invention of claim 8 and derive patentable novelty therefrom. For all of the above reasons, it is respectfully requested that the Examiner reconsider and withdraw this rejection under 35 U.S.C. 103(a).

Applicants have presented a new Figure 7 in regard to objection to the drawing, and have amended the specification in regard to identification of the status of the parent application and in regard to rejection of the claims based on adequacy of the description. In addition, applicants have shown that the present claims are patentable over the various combinations of references cited. Also, applicants have added new claim 12 to represent a form of the invention described in the specification. It is respectfully requested that the Examiner approve the replacement drawing sheets including a new drawing figure and reconsider and withdraw all objections and rejections.

Respectfully submitted,



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1 October 2004

APPENDIX

Attached hereto as an Appendix are "Annotated Marked-up Drawings" showing in red changes made to original sheets 1, 2 and 3 of the drawings.

ANNOTATED MARKED-UP DRAWINGS

~~SERIAL #~~

TITLE: ~~THRU-THE-THICKNESS FIBER-REINFORCED, RESIN-TRANSFER-MOLDED, COMPOSITE FAN BLADE~~ FIBER REINFORCED COMPOSITE ARTICLE

INVENTOR: ~~BRUCE G. BUSBEY, et al.~~ JACK W. BALDWIN et al.

DOCKET: 13DV-13367-2

ATTY: ~~NATE HERKAMP~~ WILLIAM SCOTT ANDRES

PHONE: (513) 243-6473- 5955

~~SHEET 1 OF 3~~

1/4

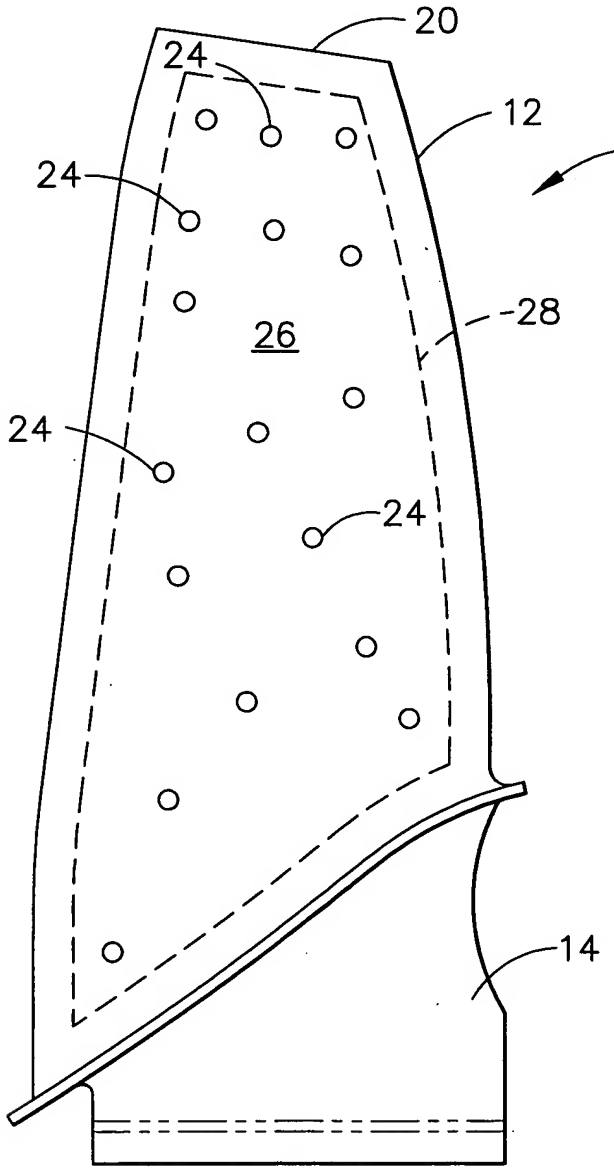

FIG. 1

— SERIAL #
TITLE: THRU THE THICKNESS FIBER REINFORCED, RESIN TRANSFER MOLDED, COMPOSITE FAN BLADE
INVENTOR: BRUCE C. BUSBEY, et al.
DOCKET: 13DV-13367-2
ATTY: NATE HERKAMP
PHONE: (513) 243-6473
SHEET 2 OF 3

FIBER REINFORCED COMPOSITE ARTICLE
JACK W. BALDWIN et al.
WILLIAM SCOTT ANDRES
5955
2/4

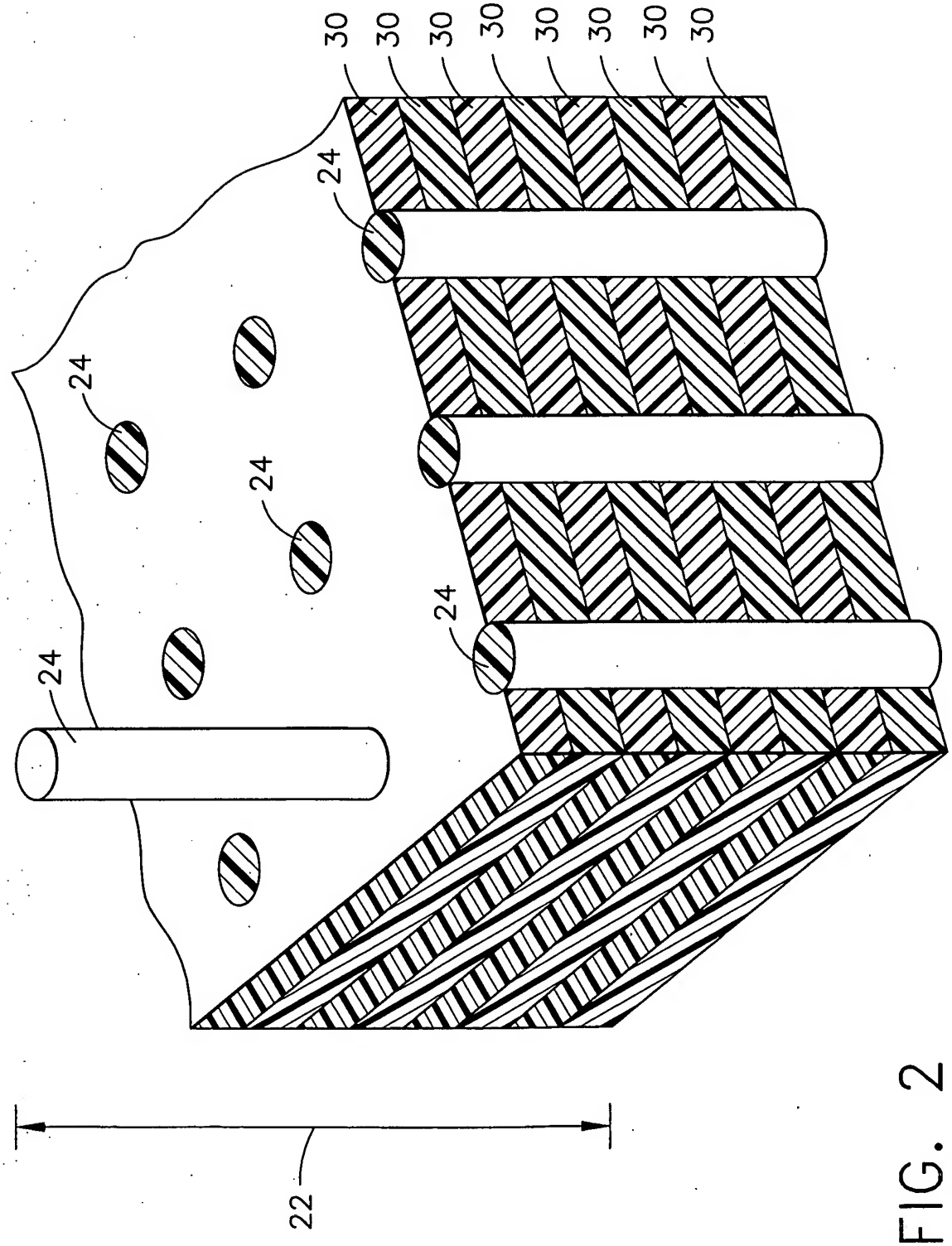

FIG. 2

~ SERIAL # ~ ~

TITLE: ~~THRU THE THICKNESS FIBER REINFORCED, RESIN TRANSFER MOLDED, COMPOSITE FAN BLADE~~

INVENTOR: ~~BRUCE C. BUSBEY, et al.~~

DOCKET: 13DV-13367-2

ATTY: ~~NATE HERKAMP~~

PHONE: (513) 243-~~6473~~- -

- ~~SHEET 3 OF 3~~ - -

FIBER REINFORCED COMPOSITE ARTICLE

JACK W. BALDWIN et al.

WILLIAM SCOTT ANDRES

5955

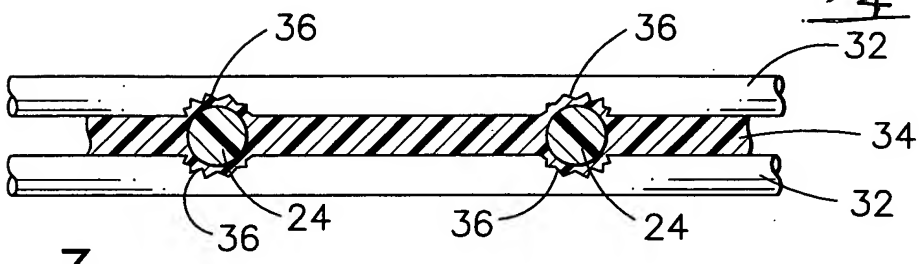

FIG. 3
(PRIOR ART)

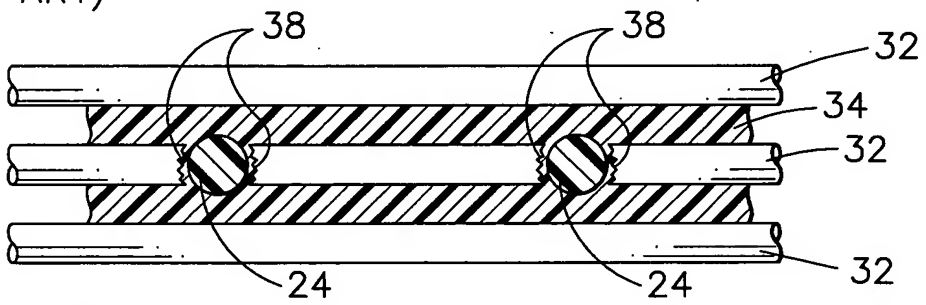

FIG. 4
(PRIOR ART)

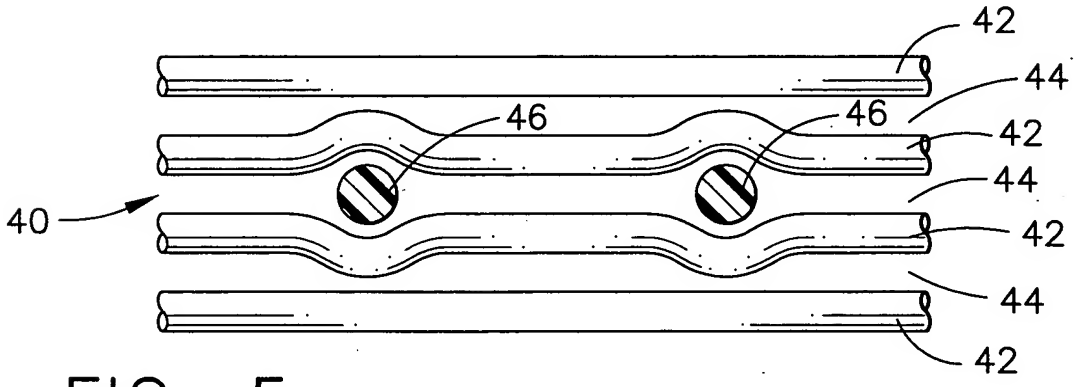

FIG. 5

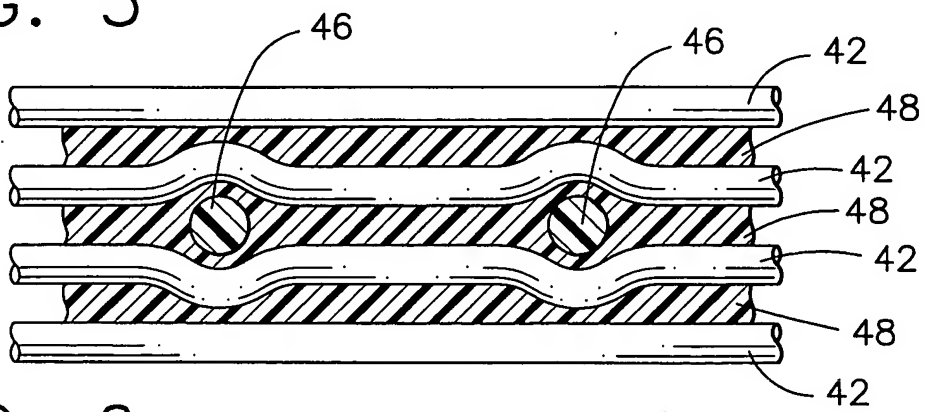

FIG. 6